

OCEAN GALES AND STORMS, APRIL 1933

Vessel	Voyage		Position at time of lowest barometer		Gale began	Time of lowest barometer	Gale ended	Lowest barometer	Direction of wind when gale began	Direction and force of wind at time of lowest barometer	Direction of wind when gale ended	Direction and highest force of wind	Shifts of wind near time of lowest barometer
	From—	To—	Latitude	Longitude									
NORTH ATLANTIC OCEAN													
Livenza, Ital.S.S.	Gibraltar	New York	38 20 N	64 16 W	Apr. 1	Noon, 2	Apr. 2	29.76	WSW	SW, 8	SW	SW, 8	Steady.
Japan Arrow, Am.S.S.	New York	Sabine	33 10 N	75 45 W	Apr. 4	2 a., 4	Apr. 4	29.60	SW	SW, 7	NW	W, 8	SW-WSW.
Atlantic Sun, Am.S.S.	Houston	Marcus Hook	33 00 N	76 50 W	do	1 a., 4	do		SW	— 6	NW	— 10	SW-W-NW.
Europa, Ger.S.S.	New York	English Channel	42 03 N	61 40 W	Apr. 5	4 p., 5	Apr. 5	29.58	WSW	W, 8	NW	WSW, 9	
President Adams, Am.S.S.	Gibraltar	New York	42 14 N	32 32 W	Apr. 4	4 a., 5	do	29.51	W	NW, 6		NW, 8	
Black Tern, Am.S.S.	New York	Rotterdam	41 08 N	48 27 W	do	Mdt., 6	Apr. 7	29.36	WSW	N, 6	NNW	W, 9	NW-N.
Maasdam, Du.S.S.	Antwerp	Habana	33 49 N	48 03 W	Apr. 6	4 a., 7	do	29.62	W	W, 9	WNW	WNW, 9	W-WNW.
Exmouth, Am.S.S.	Casablanca	Norfolk	35 31 N	39 10 W	Apr. 7	2 p., 7	do	29.50	S	SW, 7	W	WSW, 8	
Scapenn, Am.S.S.	Copenhagen	New York	58 33 N	9 00 W	Apr. 12	2 a., 12	Apr. 12	29.79	W	W, 7	NW	WNW, 8	W-NW.
Penrith Castle, Br.S.S.	Gibraltar	do	37 52 N	40 25 W	do	4 p., 13	Apr. 15	29.90	S	W, 6	NW	NW, 8	Steady.
Silverwainut, Br.M.S.	Port Said	Boston	40 10 N	38 20 W	Apr. 13	2 p., 14	do	29.59	SW	WNW, 8	N	NNW, 9	WSW-WNW.
Youngtown, Am.S.S.	Rotterdam	Tampico	23 00 N	94 40 W	Apr. 15	—, 15	do	29.99	NNW	NNW, 7	NNW	N, 8	
Capetown Maru, Jap.S.S.	Hamburg	New York	45 28 N	35 20 W	Apr. 16	10 a., 16	Apr. 17	29.25	W	NW, 9	NW	NW, 9	
W. S. Miller, Am.S.S.	Houston	Fall River	39 34 N	71 57 W	Apr. 19	10 a., 19	Apr. 24	30.06	NE	NE, —	NE	NE, 8	Steady.
West Imboden, Am.S.S.	Pernambuco	Boston	35 27 N	62 21 W	Apr. 17	4 p., 20	Apr. 21	29.93	NE	NE, 8	NE	NE, 8	Do.
Coamo, Am.S.S.	New York	San Juan and return	34 20 N	71 30 W	Apr. 23	2 a., 23	Apr. 23	29.67	N	N, 8	N	NE, 8	N-NE-N.
West Madaket, Am.S.S.	Avonmouth	Panama City, Fla.	44 00 N	23 15 W	do	10 p., 23	Apr. 24	29.20	SSW	SW, 8	NW	NW, 10	SSW-NW.
Binnendyk, Du.S.S.	Habana	Antwerp	37 35 N	52 38 W	do	4 a., 24	do	29.40	SSE	S, 8	NNW	S, 8	SSE-S-NW.
Black Gull, Am.S.S.	New York	do	44 50 N	42 26 W	Apr. 24	6 p., 24	do	29.50	S	S, 8	NW	NW, 9	
American Farmer, Am.S.S.	London	New York	41 03 N	18 45 W	Apr. 23	10 a., 24	Apr. 25	28.95	SSW	W, 10	WSW	W, 11	
Tuscarora, Br.S.S.	do	Philadelphia	49 32 N	15 54 W	Apr. 22	10 —, 24	Apr. 26	29.17	SW	S, 9	WNW	SW, 10	S-SW-W.
Mexican, Am.S.S.	Wilmingon, Calif.	New York	35 30 N	73 32 W	Apr. 25	do	Apr. 25	29.47	SSW	SSW	SSW	SSW, 10	Steady.
Black Tern, Am.S.S.	Antwerp	Baltimore	49 44 N	14 20 W	do	8 a., 25	Apr. 27	29.48	SSE	WSW, 7	N	W, 9	SSE-SW-W.
McKeesport, Am.S.S.	Havre	New York	41 18 N	64 30 W	Apr. 26	9 a., 26	Apr. 26	29.44	S	S, 9	SW	S, 9	S-SSW.
Black Falcon, Am.S.S.	New York	Rotterdam	49 11 N	21 55 W	Apr. 28	8 p., 30	Apr. 30	29.89	N	NNE, 7	NNE	NNE, 9	N-NNE.
NORTH PACIFIC OCEAN													
Yeiyo Maru, Jap.S.S.	Yokohama	Los Angeles	42 30 N	166 10 E	Mar. 31	8 p., 1	Apr. 3	29.04	SW	S, 5	W	W, 8	S-W.
Hauraki, Br.M.S.	Suva, Fiji	Vancouver	48 20 N	125 05 W	Apr. 2	8 p., 3	do	30.13	WNW	NW, 7	NW	NW, 8	WNW-NW.
City of Victoria, Br.S.S.	Muroran	do	47 40 N	160 59 E	do	8 a., 2	do	28.87	W	W, 7	NW	NW, 8	Steady.
Batou, Du.S.S.	Los Angeles	Portland	40 53 N	124 51 W	Apr. 3	—, 4	Apr. 4	29.88	NNW	NNW, 11	N	NNW, 11	N-NNW-N.
Admiral Peoples, Am.S.S.	Portland	San Diego	44 49 N	124 18 W	Apr. 5	4 p., 5	Apr. 7	29.79	N	NNW, —	N	NNW, 8	Steady.
Silverbelle, Br.M.S.	Manila	Portland	49 57 N	164 45 W	Apr. 8	—, 9	Apr. 10	29.45	NNW	W, 8	NW	W, 8	Do.
City of Victoria, Br.S.S.	Muroran	Vancouver	49 02 N	144 00 W	Apr. 12	4 a., 12	Apr. 13	29.41	SSW	SSW, 7	SW	SSW, 8	Do.
New York, Am.S.S.	Otaru	San Francisco	42 17 N	146 50 E	Apr. 15	5 a., 16	Apr. 16	29.12	S	S	S	S, 8	SSW-SW.
Levant Arrow, Am.S.S.	Dairen	San Pedro	39 35 N	153 45 E	do	10 a., 16	Apr. 17	29.47	SE	S, 9	W	S, 9	SSE-S-W.
New York, Am.S.S.	Otaru	San Francisco	49 39 N	163 30 W	Apr. 23	7 a., 24	Apr. 25	29.02	ESE			S, 9	Steady.
Kiyo Maru, Jap.S.S.	Yokohama	Los Angeles	41 36 N	164 21 E	do	2 p., 23	do	29.09	NE	NE, 8	NW	NE, 8	E-NE-N.
Bonneville, Nor.M.S.	Bais, P.I.	San Pedro	39 29 N	170 28 E	do	10 a., 24	do	29.42	SSE	SW, 11	WNW	WSW, 11	SW-WSW.
Olympia, Am.S.S.	Taku Bar	Vancouver	49 35 N	163 35 W	Apr. 27	do	Apr. 28	29.58	S	S	SSW	S, 10	Steady.
Stanley Dollar, Am.S.S.	Guam	Los Angeles	40 20 N	173 30 E	Apr. 28	10 a., 28	do	29.49	WSW	WSW, —	WSW	WSW, 9	Do.
Ethan Allen, Am.S.S.	Cebu, P.I.	San Pedro	32 00 N	155 00 E	do	3 a., 29	Apr. 29	29.78	NE	ENE, 9	NE	ENE, 9	E-ENE-NE.
Bonneville, Nor.M.S.	Bais	do	40 35 N	144 50 W	Apr. 29	1 a., 30	May 1	29.84	SW	WSW, 7	NW	WNW, 9	WSW-W.
SOUTH PACIFIC OCEAN													
Elveric, Br.S.S.	Tyne	Melbourne	41 04 S	129 50 E	Apr. 7	2 p., 10	Apr. 13	29.38	NNE	NW, 4	SW	NNW, 10	
Monterey, Am.S.S.	Pago Pago	San Pedro	31 00 S	175 49 E	Apr. 11	4 p., 12	do	29.34	ESE	ESE, 9	NW	ESE, 9	E-ESE-NE.

¹ Barometer uncorrected.

NORTH PACIFIC OCEAN, APRIL 1933

By WILLIS E. HURD

Atmospheric pressure.—During April 1933 the greater part of the centers of cyclonic action on the North Pacific except in the northwestern sector, ran in higher latitudes than normal, and as a consequence the average center of the Aleutian low lay over the Bering Sea (St. Paul, 29.67 inches), where the pressure was a tenth of an inch below the normal.

Anticyclonic conditions were well established over most of the middle-latitude region and the extreme northeast, with pressures above normal from lower Alaska and the northern west coast of the United States southwestward to Midway Island and thence westward to the China coast. Depressions were few or entirely absent over much of the eastern half of this great area during the month.

Cyclones and gales.—A sharp diminution in gale occurrence was experienced in April as compared with March on the North Pacific. Even in the neighborhood of the Kuril Islands and northern Japan—frequently the stormiest region of the ocean—gales were infrequent, with none reported as exceeding force 9.

Cyclonic activity was for the most part comparatively weak over the main ocean routes, except during the periods of considerably depressed barometer which occurred over the Aleutian area on a few early and late days of the month. The second of these periods caused the most wide-spread storminess of April, during the 23d to 28th. The area swept spottedly by gales at this time lay roughly between latitude 39° N. and the Aleutian Islands and longitudes 160° W. and 170° E. Few observations, however, showed winds exceeding 9 in force, and of these the severest was a southwesterly gale of force 11 near the one hundred and eightieth meridian and 40° N. on the 24th.

TABLE 1.—Averages, departures, and extremes of atmospheric pressure at sea level, North Pacific Ocean, April 1933, at selected stations

Stations	Average pressure	Departure from normal	Highest	Date	Lowest	Date
	<i>Inches</i>	<i>Inch</i>	<i>Inches</i>		<i>Inches</i>	
Point Barrow.....	29.99	-0.10	30.30	16	29.62	30
Dutch Harbor.....	29.72	-.06	30.48	16	28.64	25
St. Paul.....	29.67	-.12	30.52	16	28.60	2
Kodiak.....	29.79	+.04	30.34	7	29.16	29
Juneau.....	30.02	+.06	30.40	3	29.58	30
Tatoosh Island.....	30.11	+.11	30.47	1	29.65	29
San Francisco.....	30.00	-.05	30.26	10	29.68	4
Mazatlan.....	29.88	-.08	29.98	28	29.78	4
Honolulu.....	30.05	-.01	30.15	29	29.66	9
Midway Island.....	30.15	+.03	30.32	2, 26	29.92	11
Guam.....	29.88	-.01	29.94	12, 14, 24	29.82	8, 21, 22
Manila.....	29.86	-.04	29.92	12, 15, 29	29.80	20, 22
Naha.....	29.96	+.04	30.14	1	29.80	25
Chichishima.....	30.03	+.06	30.23	2	29.72	27
Nemuro.....	30.02	-----	30.42	3	29.24	15

NOTE.—Data based on 1 daily observation only, except those for Juneau, Tatoosh Island, San Francisco, and Honolulu, which are based on 2 observations. Departures are computed from best available normals related to time of observation.

Local gales occurred along the American coast near Capes Flattery and Mendocino on the 3d, and at the latter point continued into the 4th, attaining a force of 11 from north-northwest during the night. Northerly gales also occurred near Cape Mendocino on the 5th and 6th. According to press reports the Grays Harbor (Wash.) fishing fleet was badly hit by the blow on the afternoon of the 5th. Ten boats and 15 men were officially declared lost, and an additional 4 boats and 4 men were still missing on the 8th.

Gales and storms in the Tropics.—Mostly quiet weather prevailed in tropical latitudes. In the Gulf of Tehuantepec, however, a moderate norther was experienced on the 15th.

In the Far East, as shown on the Japanese weather maps, a tropical disturbance of apparently moderate

intensity appeared on the 22d as a slight depression between Guam and Yap. It moved westward for some distance toward the Philippine Islands, then recurved into north and northeast, passing south of the Ogasawara Islands on the 27th, from between which point and southern Japan the S.S. *Hide Maru* reported a strong gale to the Tokyo office. The American steamer *Ethan Allen* reported receiving a warning from the Tokyo Central Observatory that the typhoon was central in 31° N., 152° E., moving northeast, on the 28th. The ship was in a moderate gale in the vicinity on that date, and in a strong gale early on the 29th in 32° N., 155° E.

Fog.—Scattered fogs were encountered on both northern and middle steamer routes from coast to coast at intervals throughout the month. It was most widespread on the 1st and 2d, at which time it blanketed much of the region east of 150° W., between parallels 40° and 50° N. Fog was noted on 6 days off the California coast, and on 5 days off the Mexican coast between Salina Cruz and Cape Corrientes. The observer on the American steamer *San Vincente*, Second Officer Hamrick, called special attention to the extraordinary frequency of fog "so far south on the west coast of Mexico." Much of the fog here was very wet and formed over a comparatively cold oceanic current from the southeast.

HURRICANE IN THE SOUTH PACIFIC OCEAN, MARCH 1933

According to a report from the American motorship *Jeff Davis*, Balboa to Brisbane, Captain N. Leknes, observer, J. W. Engh, a hurricane occurred on March 29–30, 1933, a little south of midway between the Cook and Tonga Islands. The ship experienced frequent squalls of force 12 "and over" from noon to midnight of the 29th. Her lowest barometer was 29.37 inches at 7 p.m. of the 29th in 23°40' S., 168°30' W. — *W. E. H.*

CLIMATOLOGICAL TABLES

CONDENSED CLIMATOLOGICAL SUMMARY

In the following table are given for the various sections of the climatological service of the Weather Bureau the monthly average temperature and total rainfall; the stations reporting the highest and lowest temperatures, with dates of occurrence; the stations reporting the greatest and least total precipitation; and other data as indicated by the several headings.

The mean temperature for each section, the highest and lowest temperatures, the average precipitation, and the greatest and least monthly amounts are found by using all trustworthy records available.

The mean departures from normal temperatures and precipitation are based only on records from stations that have 10 or more years of observations. Of course, the number of such records is smaller than the total number of stations.